

Notice of Allowability

Application No.

10/074,855

Examiner

Rodney G. McDonald

Applicant(s)

PERRIN, MARK A.

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 1-15-04.
2. ☒ The allowed claim(s) is/are 2-17, 19-29 and 31-47.
3. ☒ The drawings filed on 11 February 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).


* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


Rodney G. McDonald
Primary Examiner
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REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

Claims 2-17 are allowable over the prior art of record because the prior art of record does not teach a cathode defining a central axis exterior to the cathode and the cathode interior sputtered surface defining a central interior axis which is ring-shaped and forms a closed loop around the exterior central axis, the anode being ring-shaped and defining a ring-shaped center axis coaxially aligned with the cathode central interior axis.

Claims 19-26 are allowable over the prior art of record because the prior art of record does not teach the toroidal cathode with the plurality of passageways positioned between the exterior surface and the sputtering surface and oriented to permit ionized sputtered deposition material discharged from the plasma generation region, to pass through the cathode and to the exterior of the cathode and the anode positioned within the vessel adjacent to the plasma generation region and facing the cathode interior sputtering surface.

Claim 27 is allowable over the prior art of record because the prior art of record does not teach the claimed subject matter including the cathode having a plurality of passageways positioned between the exterior surface and the sputtering surface and oriented to permit ionized sputtered deposition material discharge to the exterior of the cathode.

Claims 28 and 29 are allowable over the prior art of record because the prior art of record does not teach the claimed subjected matter including the cathode having a

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plurality of passageways positioned between the exterior surface and the sputtering surface and oriented to permit ionized sputtered deposition material discharge to the exterior of the cathode.

Claims 31-37 are indicated as being allowable over the prior art of record because the prior art of record does not teach the cathode having a plurality of apertures positioned to discharge sputtered deposition material from the interior of the cathode, the method further comprising positioning the semiconductor workpiece within the vessel interior to face the sputtering surface apertures to receive sputtered deposition material from the interior of the cathode.

Claims 38-45 are allowable over the prior art of record because the prior art of record does not teach the method as claimed including directing ionized deposition material through a plurality of apertures in the cathode to the exterior of the cathode and onto the substrate.

Claim 46 is allowable over the prior art of record because the prior art of record does not teach the subject matter as claimed including the plurality of apertures in the cathode in combination with the torus-shaped magnetic field.

Claim 47 is allowable over the prior art of record because the prior art of record does not teach the claimed subject matter including the plurality of apertures in the cathode in combination with the torus-shaped magnetic field.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

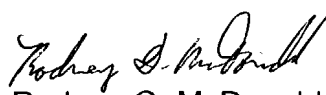
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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
February 20, 2004